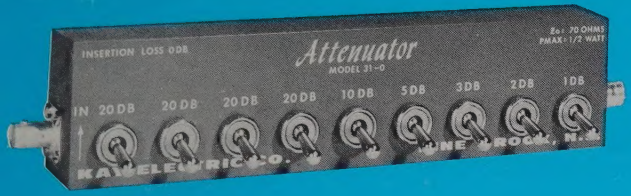
FILE COPY



INSTRUCTION MANUAL

ISSUE E

KAY

Attenuators

POLICY COVERING REPRODUCTION
AND USE OF TECHNICAL DATA

KAY ELECTRIC COMPANY

DATA CONTAINED IN THIS MANUAL IS COPYRIGHTED BY KAY ELECTRIC COMPANY AND IS FURNISHED SOLELY FOR THE PURPOSE OF PROVIDING INSTRUCTIONS FOR OPERATION AND MAINTENANCE OF THE APPARATUS DESCRIBED HEREIN. SAID DATA SHALL NOT BE USED BY THE PURCHASER OR THE GOVERNMENT FOR PROMOTIONAL PROCUREMENT, DEVELOPMENT, OR MANUFACTURING PURPOSES, NOR SHALL THE DATA BE REPRODUCED OR DISCLOSED WITHOUT PERMISSION FROM KAY ELECTRIC COMPANY. IN THE EVENT OF RESALE OF THE APPARATUS TO THE GOVERNMENT BY THE PURCHASER, THE PURCHASER SHALL NOTIFY THE GOVERNMENT OF THE LIMITED RIGHT TO USE SAID DATA.

INSTRUCTION MANUAL

ISSUE E

Attenuators

Copyright, KAY ELECTRIC CO. 1960

KAY ELECTRIC COMPANY
MAPLE AVENUE • PINE BROOK, N. J. • CAPITAL 6-4000

KAY ATTENUATORS

INTRODUCTION.

Kay *Attenuators* are available in four basic models, designed to furnish precise attenuation from dc to 500 mc. Each of the four types is described separately in the following pages. Specially developed high-frequency switches, with solid-silver contacts set in molded teflon, are used in all models. The individual switched steps are isolated in carefully engineered, shielded compartments and precision carbon-film resistors are used throughout. These attenuators provide low insertion loss, high accuracy, and flat frequency response across the specified frequency range. Attenuation from zero to 119 db, in as small as 1-db increments, can be obtained. All models are symmetrical (bi-directional) attenuators.

Kay *Attenuators* are designed to provide a means of inserting an accurate and fixed amount of loss in circuits operating in the dc to 500-mc range, and are useful to 1000 mc.

Typical applications include:

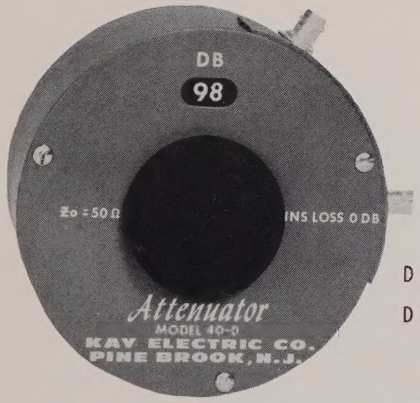
a. Supplemental attenuation, for instruments with insufficient attenuation range.

b. Replacement attenuator, for instruments not provided with suitably accurate attenuation.

c. Vernier attenuator, where signal source includes only large-increment or uncalibrated attenuation.

d. General purpose attenuator, for instruments without internal attenuation.

e. Standard attenuator, for evaluating other unknown or uncalibrated attenuators.



DIRECT-READING
DIGITAL ATTENUATORS

DRD ATTENUATORS, MODELS 40-0, 41-0 and 42-0.

Description: Kay *DRD Attenuators* are available in three models, as listed under Specifications. These units are contained in silver plated brass housings to provide rugged, stable assemblies. Each switch is mounted in a separate shielded compartment, which is heavily silver plated for improved shielding at high frequencies.

The concentric knob assembly permits stepped attenuation in 10-db and 1-db increments. The outer knob (closest to the panel) controls the 10-db steps, while the inner knob (center concentric) controls the 1-db steps. Stepped attenuation from 0 to 119 db is available.

SPECIFICATIONS		
MODEL		CAT. NO.
40-0	50 OHMS NOMINAL	433-A
41-0	70 OHMS NOMINAL	443-A
42-0	90 OHMS NOMINAL	453-A
DB SWITCHED	119 DB TOTAL (IN 1-DB STEPS)	
STEPS	1 DB AND 10 DB	
INSERTION LOSS	0-DB AT LOW FREQUENCIES; APPROX. 0.1 DB AT 250 MC; APPROX. 0.2 DB AT 500 MC.	
ACCURACY OF ATTENUATION	AT FULL ATTENUATION: 1.0 DB AT 250 MC; 2.0 DB FROM 250 TO 500 MC. GREATER ACCURACY AT LOWER FREQUENCIES AND/OR USING FEWER ATTENUATION STEPS.	
FREQ. RANGE	DC TO 500 MC; USEFUL TO 1000 MC.	
SWR	1.2:1 MAX., UP TO 250 MC. 1.4:1 MAX., 250 TO 500 MC.	
MAX. POWER	0.5 WATT	
CONNECTORS	BNC TYPE UG-625/U	
DIMENSIONS	$5\frac{1}{2}$" DIA. X 4"	
WEIGHT	4.5 LBS.	

A unique, automatic, and smooth switching arrangement is used. A brief explanation of how the concentric controls permit insertion of the 1 or 10-db increments may be of interest to the user. See Schematic #KB-6269-B.

Stepped attenuation in 1-db increments is controlled by the inner concentric knob, which turns a circular control plate that is grooved to accept the switch lever arms. As the knob is turned through its range, appropriate switches are opened or closed to switch in 1-db attenuation increments.

For example: for 1 db, S-3 is closed; for 2 db, S-3 is opened and S-5 is closed; for 3 db, both S-3 and S-5 are closed. For 5 db, S-3, S-5 and S-7 are closed. From the schematic it can be seen that up to 9 db in 1-db increments can be additively inserted.

The outer concentric knob controls the 10-db steps. Starting from zero db, switch S-1 will close as the outer knob is rotated, inserting 10 db attenuation. Switch S-1 will open and S-2 will close to furnish 20 db attenuation. For 30 db attenuation, both S-1 and S-2 will close; for 40 db, S-1 is open while S-2 and S-4 are closed. 1-db increments can be added to the 10 db steps by rotating the inner knob.

The three *DRD* models are identical except for characteristic input and each of the three models is equipped with type UG-625-U female connectors. Mating male connector is type UG-88/U which will accept RG-55, RG-58, etc., coaxial cable. For all practical purposes, the insertion loss is negligible and attenuation is read directly as indicated on the dial.

C-16 through C-39 in model 40-0 attenuator are composed of fixed and stray capacitances. In models 41-0 and 42-0, C-16 through C-39 are stray capacitances only.

MAINTENANCE, DRD ATTENUATORS.

a. To disassemble a *DRD Type Attenuator*, remove the three 6-32 machine screws from the bottom of the case.

b. Next, remove the ground screws located below the input and output connectors.

c. Now, grasp the top section in one hand and the bottom section in the other, and carefully pull the sections apart.

Disassembly to this extent will enable inspection and repair of electrical components. Disassembly beyond this stage is not recommended. Considerable care should be exercised if any of the connections are unsoldered. Excess heat from the soldering iron will damage the carbon-film resistors.

Replacement switches are available only from Kay Electric Co. The resistors are all special precision resistors and should not be replaced with other than identical types.

PARTS LIST, DRD ATTENUATORS

MODEL 40-0

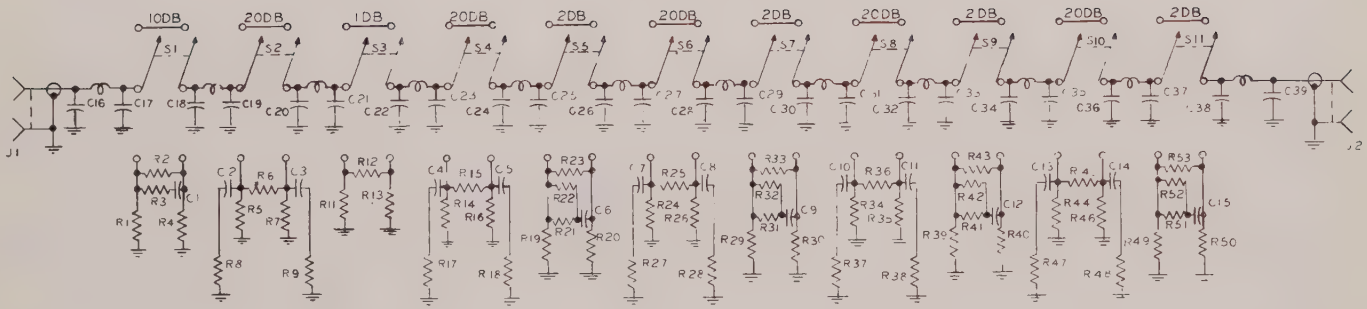
Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUES IN OHMS).	
R-1	103	6558-27
R-2	76.4	6558-24
R-3	FACTORY SELECTED	
R-4	103	6558-27
R-5	65.4	6558-21
R-6	264	6558-37
R-7	65.4	6558-21
R-8	FACTORY SELECTED	
R-9	FACTORY SELECTED	
R-10	NOT USED	
R-11	931	6558-50
R-12	6.18	6558-4
R-13	931	6558-50
R-14	65.4	6558-21
R-15	264	6558-37
R-16	65.4	6558-21
R-17	FACTORY SELECTED	
R-18	FACTORY SELECTED	
R-19	467	6558-45
R-20	467	6558-45
R-21	FACTORY SELECTED	
R-22	FACTORY SELECTED	
R-23	12.43	6558-8
R-24	65.4	6558-21
R-25	264	6558-37
R-26	65.4	6558-21
R-27	FACTORY SELECTED	
R-28	FACTORY SELECTED	
R-29	467	6558-45
R-30	467	6558-45
R-31	FACTORY SELECTED	
R-32	FACTORY SELECTED	
R-33	12.43	6558-8
R-34	65.4	6558-21
R-35	65.4	6558-21
R-36	264	6558-37
R-37	FACTORY SELECTED	
R-38	FACTORY SELECTED	
R-39	467	6558-45
R-40	467	6558-45
R-41	FACTORY SELECTED	
R-42	FACTORY SELECTED	
R-43	12.43	6558-8
R-44	65.4	6558-21
R-45	264	6558-37
R-46	65.4	6558-21
R-47	FACTORY SELECTED	
R-48	FACTORY SELECTED	
R-49	467	6558-45
R-50	467	6558-45
R-51	FACTORY SELECTED	
R-52	FACTORY SELECTED	
R-53	12.43	6558-8
C-1 THRU C-39	FACTORY SELECTED	
S-1 THRU S-11	SWITCH, DPDT	254-T
J-1 & J-2	JACK, UG-625-U	451

MODEL 41-O

Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUES IN OHMS).	
R-1	134.8	6558-31
R-2	100	6558-26
R-3	FACTORY SELECTED	
R-4	134.8	6558-31
R-5	85.6	6558-25
R-6	345	6558-41
R-7	85.6	6558-25
R-8	FACTORY SELECTED	
R-9	FACTORY SELECTED	
R-10	NOT USED	
R-11	1217	6558-51
R-12	8.08	6558-5
R-13	1217	6558-51
R-14	85.6	6558-25
R-15	345	6558-41
R-16	85.6	6558.25
R-17	FACTORY SELECTED	
R-18	FACTORY SELECTED	
R-19	611	6558-47
R-20	611	6558-47
R-21	FACTORY SELECTED	
R-22	NOT USED	
R-23	16.27	6558-9
R-24	85.6	6558-25
R-25	345	6558-41
R-26	85.6	6558-25
R-27	FACTORY SELECTED	
R-28	FACTORY SELECTED	
R-29	611	6558-47
R-30	611	6558-47
R-31	FACTORY SELECTED	
R-32	NOT USED	
R-33	16.27	6558-9
R-34	85.6	6558-25
R-35	85.6	6558-25
R-36	345	6558-41
R-37	FACTORY SELECTED	
R-38	FACTORY SELECTED	
R-39	611	6558-47
R-40	611	6558-47
R-41	FACTORY SELECTED	
R-42	NOT USED	
R-43	16.27	6558-9
R-44	85.6	6558-25
R-45	345	6558-41
R-46	85.6	6558-25
R-47	FACTORY SELECTED	
R-48	FACTORY SELECTED	
R-49	611	6558-47
R-50	611	6558-47
R-51	FACTORY SELECTED	
R-52	NOT USED	
R-53	16.27	6558-9
C-1 THRU C-15	FACTORY SELECTED	
C-16 THRU C-39	NOT USED	
S-1 THRU S-11	SWITCH, DPDT	254-T
J-1 & J-2	JACK, UG-625/U	451

MODEL 42-0

Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUES IN OHMS).	
R-1	173	6558-32
R-2	128	6558-30
R-3	FACTORY SELECTED	
R-4	173	6558-32
R-5	110	6558-28
R-6	446	6558-44
R-7	110	6558-28
R-8	FACTORY SELECTED	
R-9	FACTORY SELECTED	
R-10	NOT USED	
R-11	1565	6558-53
R-12	10.38	6558-7
R-13	1565	6558-53
R-14	110	6558-28
R-15	446	6558-44
R-16	110	6558-28
R-17	FACTORY SELECTED	
R-18	FACTORY SELECTED	
R-19	785	6558-48
R-20	785	6558-48
R-21	FACTORY SELECTED	
R-22	NOT USED	
R-23	20.91	6558-12
R-24	110	6558-28
R-25	446	6558-44
R-26	110	6558-28
R-27	FACTORY SELECTED	
R-28	FACTORY SELECTED	
R-29	785	6558-48
R-30	785	6558-48
R-31	FACTORY SELECTED	
R-32	NOT USED	
R-33	20.91	6558-12
R-34	110	6558-28
R-35	110	6558-28
R-36	446	6558-44
R-37	FACTORY SELECTED	
R-38	FACTORY SELECTED	
R-39	785	6558-48
R-40	785	6558-48
R-41	FACTORY SELECTED	
R-42	NOT USED	
R-43	20.91	6558-12
R-44	110	6558-28
R-45	446	6558-44
R-46	110	6558-28
R-47	FACTORY SELECTED	
R-48	FACTORY SELECTED	
R-49	785	6558-48
R-50	785	6558-48
R-51	FACTORY SELECTED	
R-52	NOT USED	
R-53	20.91	6558-12
C-1 THRU C-15	FACTORY SELECTED	
C-16 THRU C-39	NOT USED	
S-1 THRU S-11	SWITCH, DPDT	254-T
J-1 & J-2	JACK, UG-625/U	451

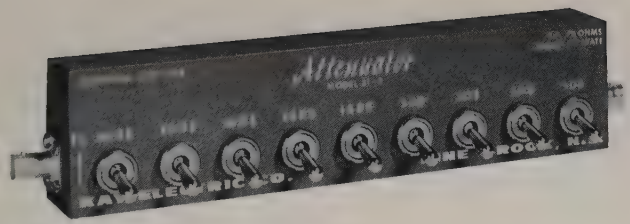


NOTE 1
SCHEMATIC FOR
MODEL NO 40-0 50Ω 0 INSERTION LOSS

NOTE 2
DELETE R22, 32, 42 & 52 ALSO C16 THRU C39
MODEL NO 41-0 70Ω 0 INSERTION LOSS

NOTE 3
DELETE R22, 32, 42 & 52 ALSO C16 THRU C39
MODEL NO 42-0 80Ω 0 INSERTION LOSS

SCHEMATIC KB-6269-B, FOR MODELS 40-0, 41-0 & 42-0



MODELS 30-0, 31-0 and 32-0

Description: Models 30-0, 31-0 and 32-0 provide up to 101 db attenuation in 9 steps, and differ only in characteristic input and output impedance. (See Specifications.)

These attenuators are assembled in lightweight castings with separate, silver-plated compartments for the switches. Input and output terminals are type UG-185-U female connectors, which accept type UG-88/U male plugs. These are useable with RG-55, RG-58, etc., coaxial cable. The individual attenuator sections are connected in series and are additive as the toggle switches are placed in the UP position. For all practical purposes, the insertion loss is negligible.

SPECIFICATIONS		
MODEL		CAT. NO.
30-0	50 OHMS NOMINAL	432-C
31-0	70 OHMS NOMINAL	442-C
32-0	90 OHMS NOMINAL	452-C
DB SWITCHED	101 DB IN 9 STEPS	
STEPS	20, 20, 20, 20, 10, 5, 3, 2 & 1 DB	
INSERTION LOSS	0-DB AT LOW FREQUENCIES; APPROX. 0.1 DB AT 250 MC; APPROX. 0.2 DB AT 500 MC.	
ACCURACY OF ATTENUATION	AT FULL ATTENUATION: 1.0 DB AT 250 MC; 2.0 DB FROM 250 TO 500 MC. GREATER ACCURACY AT LOWER FREQUENCIES AND/OR USING FEWER ATTENUATION STEPS.	
FREQ. RANGE	DC TO 500 MC; USEFUL TO 1000 MC	
SWR	1.2:1 MAX., UP TO 250 MC; 1.4:1 MAX., 250 TO 500 MC.	
MAX. POWER	0.5 WATT	
CONNECTORS	BNC TYPE UG-185/U	
DIMENSIONS	2" x 9¾" x 2"	
WEIGHT	3 LBS.	

PARTS LIST, MODELS 30-0, 31-0 & 32-0

MODEL 30-0

Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUES IN OHMS).	
R-1	65.4	6558-21
R-2	264	6558-37
R-3	65.4	6558-21
R-4	65.4	6558-21
R-5	264	6558-37
R-6	65.4	6558-21
R-7	65.4	6558-21
R-8	264	6558-37
R-9	65.4	6558-21
R-10	65.4	6558-21
R-11	264	6558-37
R-12	65.4	6558-21
R-13	103	6558-27
R-14	76.4	6558-24
R-15	103	6558-27
R-16	191	6558-34
R-17	32.5	6558-16
R-18	191	6558-34
R-19	313	6558-39
R-20	18.9	6558-10
R-21	313	6558-39
R-22	467	6558-45
R-23	12.43	6558-8
R-24	467	6558-4'
R-25	931	6558-50
R-26	6.18	6558-4
R-27	931	6558-50
R-28 THRU R-40	FACTORY SELECTED	
C-1 THRU C-13	FACTORY SELECTED	
S-1 THRU S-9	SWITCH, DPDT	254-T
J-1 & J-2	JACK, UG-185/U	204

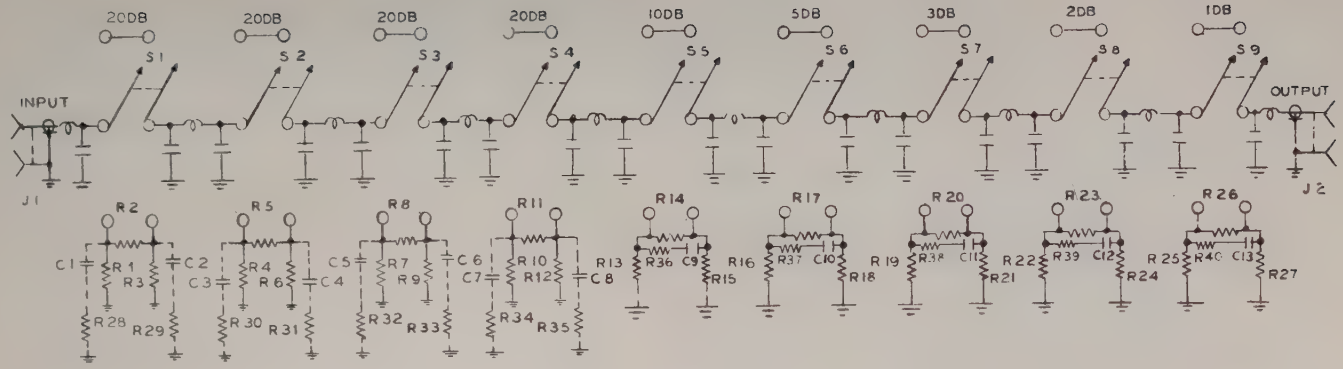
MODEL 31-O

Dwg. Symbol No.	Description (ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUES IN OHMS).	Kay Part No.
R-1	85.6	6558-25
R-2	345	6558-41
R-3	85.6	6558-25
R-4	85.6	6558-25
R-5	345	6558-41
R-6	85.6	6558-25
R-7	85.6	6558-25
R-8	345	6558-41
R-9	85.6	6558-25
R-10	85.6	6558-25
R-11	345	6558-41
R-12	85.6	6558-25
R-13	134.8	6558-31
R-14	100	6558-26
R-15	134.8	6558-31
R-16	250	6558-36
R-17	42.5	6558-17
R-18	250	6558-36
R-19	409	6558-42
R-20	24.7	6558-13
R-21	409	6558-42
R-22	611	6558-47
R-23	16.27	6558-9
R-24	611	6558-47
R-25	1217	6558-51
R-26	8-08	6558-5
R-27	1217	6558-51
R-28 THRU R-35	FACTORY SELECTED	
R-36 THRU R-40	NOT USED	
C-1 THRU C-8	FACTORY SELECTED	
C-9 THRU C-13	NOT USED	
J-1 & J-2	JACK, UG-185/U	204
S-1 THRU S-9	SWITCH, DPDT	254-T

MODEL 32-O

Dwg. Symbol No.	Description (ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUES IN OHMS).	Kay Part No.
R-1	110	6558-28
R-2	446	6558-44
R-3	110	6558-28
R-4	110	6558-28
R-5	446	6558-44
R-6	110	6558-28
R-7	110	6558-28
R-8	446	6558-44
R-9	110	6558-28
R-10	110	6558-28
R-11	446	6558-44
R-12	110	6558-28
R-13	173	6558-32
R-14	128	6558-30
R-15	173	6558-32
R-16	321	6558-40
R-17	54.7	6558-19
R-18	321	6558-40
R-19	526	6558-46
R-20	31.7	6558-14
R-21	526	6558-46
R-22	785	6558-48
R-23	20.91	6558-12
R-24	785	6558-48
R-25	1565	6558-53
R-26	10.38	6558-7
R-27	1565	6558-53
R-28 THRU R-39	NOT USED	
R-40	FACTORY SELECTED	
C-1 THRU C-12	NOT USED	
C-13	FACTORY SELECTED	
J-1 & J-2	JACK, UG-185/U	204
S-1 THRU S-9	SWITCH, DPDT	254-T

**** ———— ****



NOTE: 1

SCHEMATIC FOR

MODEL NO.	30-0 50Ω	0 INSERTION LOSS
" "	31-0 70Ω	" "
" "	32-0 90Ω	" "

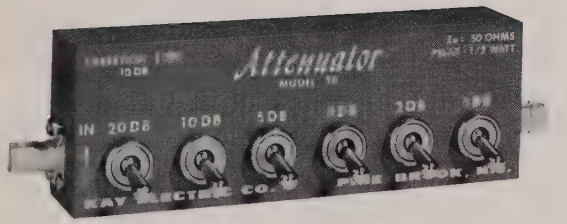
NOTE: 2

CAVITY INDUCTANCE & CAPACITANCE INDICATED

NOTE: 3

C1 THRU C13 & R28 THRU R40 ARE FACTORY SELECTED AND MAY BE OMITTED ON SOME UNITS

SCHEMATIC KA-5455, FOR MODELS 30-0, 31-0, 32-0
AUA SERIAL NO. 9300

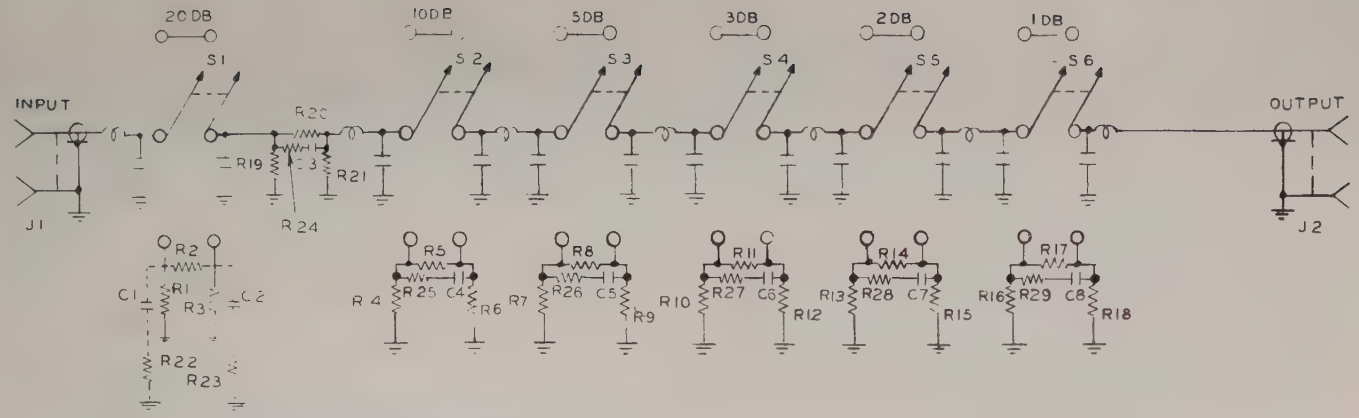


MODELS 20-0, 21-0 and 22-0.

Description: Models 20-0, 21-0 and 22-0 provide up to 41 db attenuation in 6 steps, and are similar except for characteristic impedances. These models are also assembled in lightweight castings, with silver-plated switch compartments. They are similar to models 30-0, 31-0 and 32-0, except for range of attenuation and number of steps.

Note: The parts lists for models 20-0, 21-0 and 22-0 are the same as the parts lists for models 20, 21 and 22, except for deletion of certain components as shown by footnotes.

SPECIFICATIONS		
MODEL		CAT. NO.
20-0	50 OHMS NOMINAL	431-B
21-0	70 OHMS NOMINAL	441-B
22-0	90 OHMS NOMINAL	451-B
DB SWITCHED	41 DB IN 6 STEPS	
STEPS	20, 10, 5, 3, 2 AND 1 DB	
INSERTION LOSS	0-DB AT LOW FREQUENCIES; APPROX. 0.1 DB AT 250 MC; APPROX. 0.2 DB AT 500 MC.	
ACCURACY OF ATTENUATION	AT FULL ATTENUATION: 0.5 DB AT 250 MC; 1.2 DB FROM 250 TO 500 MC. GREATER ACCURACY AT LOWER FREQUENCIES AND/OR USING FEWER ATTENUATION STEPS.	
FREQ. RANGE	DC TO 500 MC; USEFUL TO 1000 MC.	
SWR	1.2:1 MAX. UP TO 250 MC; 1.4:1 MAX., 250 TO 500 MC.	
MAX. POWER	0.5 WATT	
CONNECTORS	BNC TYPE UG-185/U	
DIMENSIONS	2" x 7" x 2"	
WEIGHT	2 LBS.	



NOTE 1:

MODEL	20-0	50 Ω.	ZERO	INSERTION LOSS
"	21-0	70 Ω.	"	"
"	22-0	90 Ω.	"	"

R-19, R-20 ARE DELETED AND SHORTING WIRE IS USED IN PLACE OF R-20.

NOTE 2:

MODEL	20	50 Ω.	10 DB	INSERTION LOSS
"	21	70 Ω.	"	"
"	22	90 Ω.	"	"

NOTE 3:

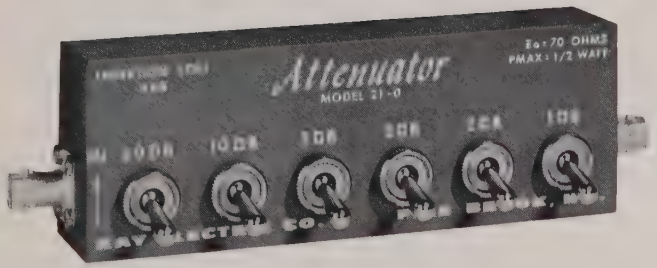
CAVITY INDUCTANCE AND CAPACITANCE IS INDICATED.

NOTE 4:

C-1 THROUGH C-8 AND R-22 THROUGH R-29 ARE FACTORY SELECTED AND MAY BE OMITTED ON SOME UNITS.

SCHEMATIC KA 5454 FOR MODELS 20-0, 21-0, 22-0; 20, 21 & 22.

AUA SERIAL NO. 9300



MODELS 20, 21 and 22.

Description: Models 20, 21 and 22 have an intentional 10-db insertion loss incorporated and are similar, except for their characteristic impedances. Up to 41-db switched attenuation in 6 steps is obtainable with these models. They are mechanically similar to models 20-0, 21-0 and 22-0 previously described.

SPECIFICATIONS		
MODEL		CAT. NO.
20	50 OHMS NOMINAL	430-B
21	70 OHMS NOMINAL	440-B
22	90 OHMS NOMINAL	450-B
DB SWITCHED	41 DB IN 6 STEPS	
STEPS	20, 10, 5, 3, 2 AND 1 DB	
INSERTION LOSS	10 DB	
ACCURACY OF ATTENUATION	AT FULL ATTENUATION: 0.5 DB AT 250 MC; 1.2 DB FROM 250 TO 500 MC. GREATER ACCURACY AT LOWER FREQUENCIES AND/OR USING FEWER ATTENUATION STEPS.	
FREQ. RANGE	DC TO 500 MC; USEFUL TO 1000 MC.	
SWR	1.2:1 MAX. UP TO 250 MC; 1.4:1 MAX. UP TO 500 MC.	
MAX. POWER	0.5 WATT	
CONNECTORS	BNC TYPE UG-185/U	
DIMENSIONS	2" x 7" x 2"	
WEIGHT	2 LBS.	

MODEL 20

Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ½ WATT, ±1% TOLERANCE. VALUES IN OHMS).	
R-1	65.4	6558-21
R-2	264	6558-37
R-3	65.4	6558-21
R-4	103	6558-27
R-5	76.4	6558-24
R-6	103	6558-27
R-7	191	6558-34
R-8	32.5	6558-16
R-9	191	6558-34
R-10	313	6558-39
R-11	18.9	6558-10
R-12	313	6558-39
R-13	467	6558-45
R-14	12,43	6558-8
R-15	467	6558-45
R-16	931	6558-50
R-17	6.18	6558-4
R-18	931	6558-50
R-19	103	6558-27
R-20	76.4	6558-24
R-21	103	6558-27
R-22 THRU R-29	FACTORY SELECTED	
C-1 THRU C-8	FACTORY SELECTED	
S-1 THRU S-6	SWITCH, DPDT	254-T
J-1 & J-2	JACK, UG-185/U	204

NOTE: MODEL 20-01 R-19, R-21, R-24 AND C-3 ARE DELETED. SHORTING WIRE IN PLACE OF R-20.

MODEL 21

Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUE IN OHMS).	
R-1	85.6	6558-25
R-2	345	6558-41
R-3	85.6	6558-25
R-4	134.8	6558-31
R-5	100	6558-26
R-6	134.8	6558-31
R-7	250	6558-36
R-8	42.5	6558-17
R-9	250	6558-36
R-10	409	6558-42
R-11	24.7	6558-13
R-12	409	6558-42
R-13	611	6558-47
R-14	16.27	6558-9
R-15	611	6558-47
R-16	1217	6558-51
R-17	8.08	6558-5
R-18	1217	6558-51
R-19	134.8	6558-31
R-20	100	6558-26
R-21	134.8	6558-31
R-22 & R-23	FACTORY SELECTED	
R-24 THRU R-29	NOT USED	
C-1 & C-2	FACTORY SELECTED	
C-3 THRU C-8	NOT USED	
J-1 & J-2	JACK, UG-185/U	204
S-1 THRU S-6	SWITCH, DPDT	254-T

NOTE: MODEL 21-0: R-19, R-21 ARE NOT USED. SHORTING WIRE USED IN PLACE OF R-20.

MODEL 22

Dwg. Symbol No.	Description	Kay Part No.
	(ALL RESISTORS ARE ¼ WATT, ±1% TOLERANCE. VALUE IN OHMS).	
R-1	110	6558-28
R-2	446	6558-44
R-3	110	6558-28
R-4	173	6558-32
R-5	128	6558-30
R-6	173	6558-32
R-7	321	6558-40
R-8	54.7	6558-19
R-9	321	6558-40
R-10	526	6558-46
R-11	31.7	6558-14
R-12	526	6558-46
R-13	785	6558-48
R-14	20.91	6558-12
R-15	785	6558-48
R-16	1565	6558-53
R-17	10.38	6558-7
R-18	1565	6558-53
R-19	173	6558-32
R-20	128	6558-30
R-21	173	6558-32
R-24 THRU R-28	NOT USED	
R-29	FACTORY SELECTED	
C-1 THRU C-7	NOT USED	
C-8	FACTORY SELECTED	
J-1 & J-2	JACK UG-185/U	204
S-1 THRU S-6	SWITCH, DPDT	254-T

NOTE: MODEL 22-O: R-19, R-21 ARE NOT USED. SHORTING WIRE USED IN PLACE OF R-20.

MAINTENANCE INFORMATION FOR MODELS 30-0, 31-0, 32-0; 20-0, 21-0, 22-0; 20, 21 and 22.

Disassembly: The case may be opened for inspection and service of internal components by removing the six #1-72 machine screws holding the bottom cover. Care should be exercised when unsoldering connections to avoid damage to the carbon-film resistors and teflon switch mounts.

Replacement Parts: Replacement switches and precision resistors are obtainable from Kay Electric Company. When ordering replacements, specify attenuator model and catalog number, as well as the circuit symbol number for the part(s) required.

GENERAL OPERATING INSTRUCTIONS FOR ALL MODELS

a. To avoid producing spurious losses through impedance mismatch, all input and output connections should be made with UG-88/U plugs. This male connector type will accept coaxial cable type RG-55, RG-58, etc.

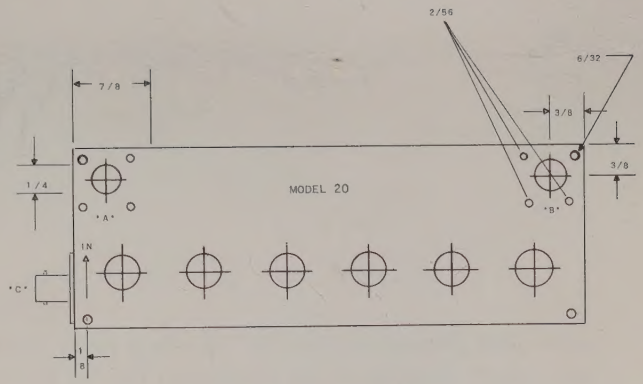
b. The attenuators constitute a direct dc path and do not include internal protective devices in the form of fuses, decoupling capacitors, etc. To avoid damage to the internal components, do not apply signals greater than ½ watt to the attenuator.

c. When using attenuator models 20, 21 and 22, the fixed 10-db insertion loss must be added to the switchable attenuation.

SPECIAL MODELS

The models listed below may have either one, or both the input and output terminals located on the front of the attenuator to permit input and/or output connections from front of panel. This design feature permits the attenuator to be mounted behind the panel when the attenuator is installed as an integral part of an instrument. Special models are listed below.

Model	One End-mounted and One Front-mounted Terminal	Both Terminals Front-mounted
20	430-B1	430-B2
21	440-B1	440-B2
22	450-B1	450-B2
20-0	431-B1	431-B2
21-0	441-B1	441-B2
22-0	451-B1	451-B2
30-0	432-C1	432-C2
31-0	442-C1	442-C2
32-0	452-C1	452-C2



One end-mounted terminal (usually used as the behind-the-panel input terminal) and one front-mounted terminal are located as indicated by 'C' & 'B'. These models are shown in the listing as numbers 430-B1 through 452-C1.

Two front-mounted terminals are located as indicated by 'A' & 'B'. These models are shown in the listing as numbers 430-B2 through 452-C2.

Remote Control Attenuator

The Kay line of precision toggle switch attenuators have been fitted for remote control operation. A simple compact unit requiring only AC line power permits the selection of switched attenuator steps, individually or in any combination. A unique circuit arrangement requires electric power only during the operating period necessary for switching. Distances of hundreds of feet can be covered. Attenuation levels from 0 to 101 db can be utilized and units can be operated in series or parallel arrangements.

92342

KAY ELECTRIC COMPANY
PINE BROOK, N.J. CApital 6-4000

PRINTED IN USA

Copyright, KAY ELECTRIC CO. 1960